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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/542,024	04/03/2000	Reinaldo A. Bergamaschi	YOR-2000-0054	4105

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FERENCE & ASSOCIATES
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EXAMINER	
LEVIN, NAUM B	

ART UNIT	PAPER NUMBER
2825	

DATE MAILED: 04/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H-A

Office Action Summary	Application No.	Applicant(s)	
	09/542,024	BERGAMASCHI ET AL.	
	Examiner	Art Unit	
	Naum B. Levin	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-13 and 15-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,8-11 and 16-18* is/are rejected.

7)☒ Claim(s) *4,5,7,12,13 and 15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to application 09/542,024 and RCE filed on 02/10/2005. Claims 1-5, 7-13 and 15-18 remain pending in the application.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 8-11 and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Choukalos et al. (US Patent 6,425,109).

As to claims 1, 10 and 18 Choukalos discloses:

(1) A method of interconnecting cores in systems-on-chip, said method comprising the steps of (col.1, ll.14-36; col.2, ll.17-31):

selecting/choosing at least two cores (chiplets/blocks) to be interconnected, each core having at least one associated pin classified in terms of predetermined functional, structural or electrical characteristic (extension type) (see table 1 [col.4, ll.51-67 and col.5, ll.1-124], extension type: PIN_NAME, LINK_NAME, GROUP_ID, LEGAL_Core, LINK_TYPE, LINK_ORDER, SOURCELESS_TIE, LINK_OPTIONS, REPOWER_CAP, FANOUT_LINK, see also Example column in the above table) (col.3, ll.26-34; col.3, ll.55-67; col.4, ll.51-67; col.5, ll.1-25; col.5, ll.43-51);

automatically assessing the compatibility (matching) of at least one pin of at least one core with respect to at least one pin of at least one other core, wherein said assessing comprises performing a compatibility check to determine whether the pins of a given pair of pins are compatible with respect to at least one given characteristic (extension type) (see table 1 [col.4, ll.51-67 and col.5, ll.1-124], extension type: PIN_NAME, LINK_NAME, GROUP_ID, LEGAL_Core, LINK_TYPE, LINK_ORDER, SOURCELESS_TIE, LINK_OPTIONS, REPOWER_CAP, FANOUT_LINK, see also Example column in the above table) (col.4, ll.21-67; col.5, ll.1-25 and ll.52-67; col.6, ll.1-51); and

automatically interconnecting said cores via establishing at least one connection between at least one pair of compatible (matching) pins (col.4, ll.21-67; col.5, ll.1-25 and ll.43-67; col.6, ll.1-51);

(10) A system for interconnecting cores in systems-on-chip, said system comprising (col.1, ll.14-36; col.2, ll.32-42):

selecting/choosing at least two cores (chiplets/blocks) to be interconnected, each core having at least one associated pin classified in terms of predetermined functional, structural or electrical characteristic (extension type) (see table 1 [col.4, ll.51-67 and col.5, ll.1-124], extension type: PIN_NAME, LINK_NAME, GROUP_ID, LEGAL_Core, LINK_TYPE, LINK_ORDER, SOURCELESS_TIE, LINK_OPTIONS, REPOWER_CAP, FANOUT_LINK, see also Example column in the above table) (col.3, ll.26-34; col.3, ll.55-67; col.4, ll.51-67; col.5, ll.1-25; col.5, ll.43-51);

automatically assessing the compatibility (matching) of at least one pin of at least

one core with respect to at least one pin of at least one other core, wherein said assessing comprises performing a compatibility check to determine whether the pins of a given pair of pins are compatible with respect to at least one given characteristic (extension type) (see table 1 [col.4, ll.51-67 and col.5, ll.1-124], extension type: PIN_NAME, LINK_NAME, GROUP_ID, LEGAL_Core, LINK_TYPE, LINK_ORDER, SOURCELESS_TIE, LINK_OPTIONS, REPOWER_CAP, FANOUT_LINK, see also Example column in the above table) (col.4, ll.21-67; col.5, ll.1-25 and ll.52-67; col.6, ll.1-51); and

automatically interconnecting said cores via establishing at least one connection between at least one pair of compatible (matching) pins (col.4, ll.21-67; col.5, ll.1-25 and ll.43-67; col.6, ll.1-51);

(18) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for interconnecting cores in systems-on-chip, said method comprising (col.1, ll.14-36; col.2, ll.43-52):

selecting/choosing at least two cores (chiplets/blocks) to be interconnected, each core having at least one associated pin classified in terms of predetermined functional, structural or electrical characteristic (extension type) (see table 1 [col.4, ll.51-67 and col.5, ll.1-124], extension type: PIN_NAME, LINK_NAME, GROUP_ID, LEGAL_Core, LINK_TYPE, LINK_ORDER, SOURCELESS_TIE, LINK_OPTIONS, REPOWER_CAP, FANOUT_LINK, see also Example column in the above table) (col.3, ll.26-34; col.3, ll.55-67; col.4, ll.51-67; col.5, ll.1-25; col.5, ll.43-51);

automatically assessing the compatibility (matching) of at least one pin of at least one core with respect to at least one pin of at least one other core, wherein said assessing comprises performing a compatibility check to determine whether the pins of a given pair of pins are compatible with respect to at least one given characteristic (extension type) (see table 1 [col.4, ll.51-67 and col.5, ll.1-124], extension type: PIN_NAME, LINK_NAME, GROUP_ID, LEGAL_Core, LINK_TYPE, LINK_ORDER, SOURCELESS_TIE, LINK_OPTIONS, REPOWER_CAP, FANOUT_LINK, see also Example column in the above table) (col.4, ll.21-67; col.5, ll.1-25 and ll.52-67; col.6, ll.1-51); and

automatically interconnecting said cores via establishing at least one connection between at least one pair of compatible (matching) pins (col.4, ll.21-67; col.5, ll.1-25 and ll.43-67; col.6, ll.1-51).

As to claims 2-3, 8-9, 11 and 16-17 Choukalos recites:

(2) The method according to claim 1, further comprising automatically assessing, subsequent to said interconnecting step, whether all pins are connected, if at least two pins are not connected, thereafter applying a protocol (algorithm/loop to) establish at least one additional connection between at least one additional pair of compatible pins (col.6, ll.6-17);

(3), (11) The method/system further comprising, prior to said selecting step, classifying said cores and said pins in terms of predetermined characteristics (col.3, ll.55-67; col.4, ll.51-67; col.5, ll.1-25);

(8), (16) The method/system according to further comprising subsequent to said interconnecting step, automatically verifying whether the pins in at least one interconnected pair of pins have matching pin characteristics (col.6, ll.6-51);

(9), (17) The method/system according to further comprising prior to said verifying step, establishing a list of pin characteristics for which a match between the pins in at least one pair of pins is required (col.4, ll.51-67; col.5, ll.1-25); said verifying step comprising the step of referring to said list of pin characteristics to determine whether the pins in at least one interconnected pair of pins have matching pin characteristics (col.5, ll.42-51; col.7, ll.18-27).

Allowable Subject Matter

3. Claims 4-5, 7, 12-13 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is an examiner's statement of reasons for allowance:

The prior art of record fails to teach or suggest or render obvious:

A method system and computer-readable medium having computer-executable instructions for creating system of interconnecting cores in systems-on-chip, comprising the steps of:

selecting at least two cores to be interconnected, each core having at least one associated pin classified in terms of predetermined functional, structural or electrical characteristic;

automatically assessing the compatibility of at least one pin of at least one core with respect to at least one pin of at least one other core, wherein said assessing comprises performing a compatibility check to determine whether the pins of a given pair of pins are compatible with respect to at least one given characteristic; and

automatically interconnecting said cores via establishing at least one connection between at least one pair of compatible pins;

prior to said selecting step, encoding said characteristics as binary decision diagram variables, wherein said assessing step comprises:

performing Boolean operations on said binary decision diagram variables to compare and match characteristics;

performing a compatibility check to determine whether the pins of a given pair of pins are compatible with respect to at least one given property;

performing a matching check to determine whether the pins of a given pair of pins exhibit equivalent values associated with at least one given property.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Johannsen (US Patent 5,910,898) discloses circuit design tool, which includes separating structural and functional aspects of components, so as to specify the desired functional behaviour of the component, leaving the actual gate-level design of the component to the design tool; translating a model of the desired logical behaviour of a circuit into a regularized set of functional components to achieve that desired behaviour;

verifying structural equivalence between pairs of components; a method for bit-reversing the signal flow in a component; and translating a logic equation into a netlist of connected logic gates.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Naum B. Levin whose telephone number is 571-272-1898. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Naum Levin

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